M&M Survival Challenge - ZOOLOGY

Abstract

In the wild there are two types of animals: the hunters and the hunted. A good predator is always on the prowl for fresh prey. What can an animal do to stay off of the menu? Find out how some animals use camouflage, and why sometimes it is best to blend in with your surroundings. In this experiment, you will be the hungry predator hunting for M&M prey. So work up that appetite and go hunting! You might be surprised at which M&Ms avoid your grasp!

Objective

In this science project you will hunt for M&M® prey in a series of different habitats to discover which M&M's® survive in each habitat and why.

Introduction

Nature can be brutal. The harsh reality is that if you are not a hunter, then you are being hunted, also known as the prey. What do animals do to avoid being eaten? Some animals develop defense mechanisms, like porcupine quills or the plated armor of an armadillo. Other animals develop gross tastes on their bodies, or poisonous mucus coatings.

This pattern of animals developing strategies to survive is called adaptation, and it is a mechanism for evolution. You may have heard the famous phrase "survival of the fittest," which Charles Darwin used to describe this natural phenomenon. In order to survive in nature, you need to be fit, and fitting in to your environment is very important to avoid being eaten!

The most common way that animals can avoid being eaten by a predator is by an adaptation called camouflage. Camouflage is a set of colorings or markings on an animal that help it to blend in with the surroundings and increase its chance for survival. The surrounding environment that the animal hides in is called the habitat, or the place where the animal lives.

Each animal needs to adapt to a unique habitat, and animals adapt in all kinds of interesting ways. Katydids, which live in green leafy trees, have adapted to their habitat by having a bright green body shaped like a leaf. Chameleons, which change habitats often in the colorful jungle, have adapted a way of changing their skin color to match their immediate environment. Decorator crabs have adapted by learning how to cover their shells with debris to blend in with their habitat.

Here is a game you can play with your friends to learn about adaptation. Get a box and fill it with clothes for different kinds of weather: a hat and sunglasses; a rain coat and an umbrella; a winter coat, hat, sweater, etc. Have one person announce a habitat (like the rain forest) and race to see who can find and put on the proper outfit (like the raincoat and boots) to adapt to that habitat. Who is the fastest? How do your made-up adaptations compare to natural adaptations that wild animals use in their natural habitats?

In the science project below, you will test how adaptation and survival work by using M&M candies as your prey. You will hunt for the M&M's in different-colored "habitats" to test whether some M&M's do better in some habitats than others. Then you can discover which M&M's are best suited to survive in each habitat.

Terms, Concepts and Questions to Start Background Research

To do this science project, you should do research that enables you to understand the following terms and concepts:

\* Prey

\* Adaptation

\* Survival

\* Predator

\* Environment

\* Habitat

\* camouflage

Materials and Equipment

\* Colored construction paper (6 large pieces)

\* Plastic baggies (6)

\* M&M's (2 packs or 1 large package;you will only need five of the six colors)

\* Stopwatch

\* 2-4 volunteer predators who like to eat M&M's

\* Lab notebook

Experimental Procedure

1. First you will need to prepare six groups of "prey" by counting and placing equal numbers of M&M's into separate plastic baggies.

2. Place 10 M&M's of each color into each baggie: 10 brown, 10 red, 10 yellow, 10 green, and 10 orange. There should be a total of 50 M&M's in each baggie.

3. Prepare different "habitats" with six large pieces of construction paper in a series of different colors: white, blue, red, yellow, green, or brown. If you have small sheets of construction paper, you may want to tape together four sheets of paper to make one large piece for each color.

4. Gather together a pack of 2-4 volunteer "predators." This can be anybody who likes to eat M&M's as much as you do: a friend, brother, sister, mom, dad, grandparent, etc.

5. Explain the rules of the game to your predators:

"First, I will pour one bag of M&M's on a colored sheet of paper. Then I will set the timer for 10 seconds. When I say go, I will start the timer and all of you will pick up and eat the M&M's until the timer beeps. You may only use two fingers to pick up the M&M's, and your other hand must be behind your back. When the timer beeps, stop eating. I will count the number of M&M's of each color that are left. Then you will repeat it again for the rest of the colors of paper."

6. Put the first habitat down in the middle of your group of predators. Make sure everyone can reach the paper.

7. Pour one of your bags of M&M's out onto the paper. Make sure that all of the M&M's are on the paper.

8. Set your timer for 10 seconds.

9. Say, Go! and start the timer. When the timer beeps, everyone should stop eating M&M's.

10. Count the M&M's that are left on the paper and record the colors left in a data table in your lab notebook, like the one shown below:

Habitat Red M&M's Brown M&M's Green M&M's Yellow M&M's Orange M&M's

Starting Number 10 10 10 10 10

White Paper

Yellow Paper

Red Paper

Green Paper

Blue Paper

11. Repeat steps 6-10 for all of the other colored construction paper "habitats."

12. Look at your data. Do you notice any interesting patterns between the color of the paper and the color of the M&M's that were eaten? What is different about the white "habitat" than the other colored habitats? How do you think this same survival strategy would work in the wild?